

Application No.: 10/527,661
Amendment Dated: November 12, 2008
Reply to Office Action of: July 28, 2008

MTS-3492US

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.-10. (Cancelled).

11. (Currently Amended) The image-processing apparatus in accordance with claim 9, An image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

target color setting means of setting a target color depending on which the color of said pixel signal is corrected, and

color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using a) said pixel signal, b) information of identifying a photographic scene by also using photographic information, and c) said target color, wherein

said color conversion means comprises:

intensity determination means of generating a correction intensity that is small on the periphery of the color region of said specific range set on the basis of two chromaticity components excluding the luminance component in the color of said pixel signal and large in the vicinity of the central portion of said region,

correction degree setting means of setting a correction degree by also using information, other than pixel information, included in said pixel signal, and

correction means of making the color of said pixel signal coincident with or close to said target color depending on said correction intensity having been generated and said correction degree having been set, wherein

said correction degree setting means sets said correction degree by identifying at least an image photographing scene according to said input image signal.

12. (Currently Amended) An image processing apparatus in accordance with claim 10 of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

target color setting means of setting a target color depending on which the color of said pixel signal is corrected, and

color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using a) the luminance component in the color of said pixel signal, b) two chromaticity components excluding said luminance component in the color of said pixel signal, and c) said target value, wherein

said color conversion means determines said correction degree by using not only said two chromaticity components of said pixel signal to be corrected but also said luminance component of said pixel signal to be corrected and, wherein

said color conversion means comprises:

intensity determination means of generating a correction intensity that is small on the periphery of the color region of said specific range set on the basis of the luminance component and the two chromaticity components excluding said luminance component in the color of said pixel signal and large in the vicinity of the central portion of said region, and

correction means of making the color of said pixel signal coincident with or close to said target color depending on said correction intensity having been generated.

13. (Currently Amended) An image processing apparatus in accordance with claim 12, wherein said intensity determination means comprises:

first function generation means of outputting a candidate of a first correction intensity for said luminance signal,

second and ~~third~~ function generation means of outputting candidates of second and third correction intensities for said two chromaticity components, respectively, and

synthesizing means of synthesizing the candidates of said first, second and third correction intensities and outputting the result as said correction intensity.

14. (Previously Presented) The image processing apparatus in accordance with claim 12, wherein said intensity determination means comprises:

first function generation means of outputting a candidate of a first correction intensity for said luminance signal,

two-dimensional function generation means of outputting a second correction intensity on the basis of a two-dimensional function typified by an ellipse using said two chromaticity components, and

synthesizing means of synthesizing the candidates of said first and second correction intensities and outputting the result as said correction intensity.

15. (Previously Presented) The image processing apparatus in accordance with claim 12, wherein said intensity determination means comprises:

first function generation means of outputting a candidate of a first correction intensity for said luminance signal,

first polar coordinate conversion means of converting said two chromaticity components into a hue signal and a saturation signal,

second function generation means of outputting a candidate of a second correction intensity for said hue signal,

third function generation means of outputting a candidate of a third correction intensity for said saturation signal, and

Application No.: 10/527,661
Amendment Dated: November 12, 2008
Reply to Office Action of: July 28, 2008

MTS-3492US

synthesizing means of synthesizing the candidates of said first, second and third correction intensities and outputting the result as said correction intensity.

16. (Previously Presented) The image processing apparatus in accordance with claim 11 or 12, wherein said correction means corrects each of said two chromaticity components to a value obtained when each of said two chromaticity components and two target chromaticity values output from said target color setting means are internally divided depending on said correction intensity.

17. (Previously Presented) The image processing apparatus in accordance with claims 11 or 12, wherein

said correction means has a second polar coordinate conversion means of converting said two chromaticity components into a hue signal and a saturation signal and said saturation signal output from said second polar coordinate conversion means to a value obtained when said hue signal and said saturation signal and the target hue signal and the target saturation signal output from said target color setting means are internally divided depending on said correction intensity.

18. (Currently Amended) The image processing apparatus in accordance with claim 11 or 12, wherein

said intensity determination means outputs a hue correction intensity for hue correction and a saturation correction intensity for saturation correction,

said correction means has a second polar coordinate conversion means of converting said two chromaticity components into t-hue-a hue signal and a saturation signal, |

hue correction means of correcting said hue signal having been converted to a value obtained when said hue signal and the target hue value output from said target color setting means are internally divided depending on said hue correction intensity, and

saturation correction means of correcting said saturation signal having been converted to a value obtained when said saturation signal and the target saturation

value output from said target color setting means are internally divided depending on said saturation correction intensity.

19. (Previously Presented) the image processing apparatus in accordance with claim 11, wherein said correction degree setting means determines said correction degree according to said input image signal and photographic information at the time when an input image is taken.

20. (Previously Presented) The image processing apparatus in accordance with claim 19, wherein said correction degree setting means comprises:

image identification means of identifying the photographic scene of an image according to said input image signal,

photographic information identification means of identifying a photographic scene according to the photographic information at the time when said input image signal is photographed, and

correction degree determination means of determining said correction degree according to the outputs of said image identification means and said image information identification means.

21. (Previously Presented) The image processing apparatus in accordance with claim 20, wherein said image identification means and said photographic information identification means identify whether a person is included in an image or not.

22. (Previously Presented) The image processing apparatus in accordance with claim 20, wherein said image identification means and said photographic information identification means identify whether the sky is included in an image or not.

23. (Previously Presented) The image processing apparatus in accordance with claim 20, wherein said image identification means and said photographic information identification means identify whether green plants are included in an image or not.

24. (Currently Amended) ~~The image processing apparatus in accordance with claim 9 or 10~~ An image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

target color setting means of setting a target color depending on which the color of said pixel signal is corrected,

color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using a) said pixel signal, b) photographic information, and c) said target color, and

means of interpolating a three-dimensional look-up table of using three input signals as addresses and outputting three output signals or interpolating two of said three-dimensional look-up tables, wherein

the correspondence relationship of making the color of said pixel signal to correspond to the color corrected using said color conversion means is stored in said three-dimensional look-up table in advance, and

the color of said each pixel signal is corrected using said three-dimensional look-up table.

25.- 34. (Cancelled).

35. (New) An image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

target color setting means of setting a target color depending on which the color of said pixel signal is corrected,

color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using a) the luminance component in the color of said pixel signal, b) two chromaticity components excluding

said luminance component in the color of said pixel signal, and c) said target value, and

means of interpolating a three-dimensional look-up table of using three input signals as addresses and outputting three output signals or interpolating two of said three-dimensional look-up tables, wherein

said color conversion means determines said correction degree by using not only said two chromaticity components of said pixel signal to be corrected but also said luminance component of said pixel signal to be corrected,

the correspondence relationship of making the color of said pixel signal to correspond to the color corrected using said color conversion means is stored in said three-dimensional look-up table in advance, and

the color of said each pixel signal is corrected using said three-dimensional look-up table.

36. (New) An image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

target color setting means of setting a target color depending on which the color of said pixel signal is corrected,

intensity determination means of generating a correction intensity on the basis of at least one chromaticity component,

among the luminance component and the two chromaticity components in the color of said pixel signal, photographic image information identification means of identifying whether an object as a target of a correction of color is included or not for each input image, the image identification means identifying according to photographic information at the time when the input image is taken,

Application No.: 10/527,661
Amendment Dated: November 12, 2008
Reply to Office Action of: July 28, 2008

MTS-3492US

correction degree determination means of determining a correction degree for each input image, according to the output of said photographic information identification means and

correction means of correcting the color of said pixel signal according to said correction intensity generated for each pixel and said correction degree determined for each input image, wherein

said correction means performs a correction of said color of said pixel signal so that a difference between said target color and said color becomes smaller after the correction than before the correction.

37. (New) The image processing apparatus according to claim 36, wherein

said photographic information identification means identifies, according to a distance to object(s) of said photographic information, as to whether a person who is able to be considered as a primary object based on its size is included or not in said input image.

38. (New) The image processing apparatus according to claim 37, wherein

said photographic information identification means identifies the person who is able to be considered as the primary object based on its size is not included in said input image in the case that the distance to said object(s) is a distance of macro view or a distance of distant view.

39. (New) The image processing apparatus according to claim 36, wherein

said photographic information identification means identifies, according to an information of said photographic information regarding flash light, a person who is able to be considered as a primary object based on its size is not included in said input image in the case that the flash light is emitted and its returned light is not detected.

40. (New) The image processing apparatus according to claim 39, wherein

the detection of said returned light is performed so as to be judged that said returned light was not detected when the luminance at a central portion in said image was not relatively high.

41. (New) The image processing apparatus according to claim 39, wherein the detection/non-detection of said returned light is judged according to the information recorded in said photographic information.

42. (New) The image processing apparatus according to claim 39, wherein said photographic information identification means identifies, according to an information of said photographic information regarding a light source, as to whether a sky is to be included or not in said input image.

43. (New) The image processing apparatus according to claim 42, wherein said photographic information identification means identifies the sky is not included in said input image in the case that said information regarding the light source indicates said light source is an indoor light.

44. (New) The image processing apparatus according to claim 36, wherein said photographic information identification means identifies, according to a photographing time of said photographic information, as to whether a sky is to be included or not in said input image.

45. (New) The image processing apparatus according to claim 36, wherein said photographic information identification means identifies, according to an estimated brightness of the object, that a sky is not included in said input image in the case that the estimated brightness is lower than a predetermined value, and

the estimated brightness is estimated according to a shutter speed and a aperture value both of which are included in said photographic information.

46. (New) The image processing apparatus according to claim 36, wherein

Application No.: 10/527,661
Amendment Dated: November 12, 2008
Reply to Office Action of: July 28, 2008

MTS-3492US

said photographic information identification means identifies, according to a photographic scene information of said photographic information, as to whether a person is included or not in said input image.